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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/822,896

Applicant(s)

MINAMI ET AL.

Examiner

Glenford Madamba

Art Unit

2151

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/100)
Paper No(s)/Mail Date 12/04, 5/06, 7/07
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 4, 11, 12, 14 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Illikkal, U.S. Patent Publication US 2004/0019670 A1.

As per Claims 1, 11, and 21, Illikkal discloses a method of accessing and maintaining socket control information for high speed network connections, the method comprising the steps of:

storing socket control information (i.e., TCB Information 232) (e.g., TCB may include local remote socket numbers, etc.) [0015] in a control block (CB) cache (e.g., TCB Cache 280) [Fig. 2] in a transport offload engine (TOE) (e.g., Transport Offload Engine 20) [Fig. 2];

wherein CB entries in the CB cache are comprised of socket control information for sockets assigned to the TOE by a host computer (e.g., Server 200) [Fig. 2];

wherein the CB cache is a multi-port device providing direct access to the CB cache via each port [Fig. 2];

wherein a first port is dedicated to transmit logic within the TOE (e.g., 'SEND')[0038-0044]; and

wherein a second port is dedicated to receive logic within the TOE (e.g., 'RECEIVE') [0030-0036] [Fig. 7].

Claims 11 and 21 recite the same limitations as claim 1, are distinguished only by their statutory category, and thus rejected accordingly.

As per Claims 2 and 12, Illikkal discloses a method as recited in Claim 1, further comprising the step of:

dedicating a port to an optional memory(e.g., External Memory Unit 230) [Fig. 2];

wherein the optional memory stores CB entries (e.g., TCB Information 232) that are directly accessible by the CB cache via the port (e.g., TCB Cache 280) [Fig.2]; and

wherein the optional memory also serves as main memory for the TOE [Fig. 2].

As per Claims 4 and 14, Illikkal discloses a method as recited in claim 1, further comprising the step of: dedicating a port for host transfers of CB entries (e.g., Host

Processor 210) [Fig. 2].

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 3, 6, 8, 9, 10, 13, 16, 18, 19, 20, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Illikkal in view of Banerjee et al (hereinafter Banerjee), U.S. Patent Publication US 2005/0114692 A1.

As per Claims 3 and 13, Illikkal in view of Banerjee discloses a method as recited in claim 2, wherein one entry in the CB cache is kept empty to facilitate reading a CB entry from the optional memory before writing a CB entry into the optional memory.

With regards to the claim, while Illikkal discloses substantial features of the invention, the additionally recited feature of the method wherein one entry in the CB cache is kept empty to facilitate reading a CB entry from the optional memory before writing a CB entry into the optional memory is taught by Banerjee in a related endeavor.

Banerjee discloses as his invention a method and system for improving the performance of a TCP connection [Abstract]. Specifically, Banerjee discloses the additionally recited feature of the method wherein one entry in the CB cache is kept empty to facilitate reading a CB entry from the optional memory before writing a CB entry into the optional memory (e.g. 'Unused Space' in PCB Cache 412 / 522) [Figs. 4 & 5].

It would thus be obvious to one of ordinary skill in the art at the time of the invention to modify and/or combine Illikkal's invention, with the above said feature, as disclosed by Banerjee, for the motivation of providing a system and method for improving computer network connection processing by prioritizing PCBs and storing frequently used or other high priority PCBs in a PCB cache whereby the high priority PCBs may be located quickly [0015].

Claim 13 recites the same limitations as claim 3, is distinguished only by statutory category, and thus rejected on the same basis.

As per Claims 6, 16 and 23, Illikkal in view of Banerjee discloses a method as recited in claim 1, further comprising the step of:

dedicating a port to low demand TOE clients [Fig. 2]; and

wherein the low demand TOE clients are granted access to the port based on a priority (Banerjee: e.g., PCBs may be 'prioritized' {High / Low Priority 'connection' with

clients}} [Abstract] [Figs. 4 & 5].

With regards to the claim, while Illikkal discloses substantial features of the invention, the additionally recited feature of the method wherein the low demand TOE clients are granted access to the port based on a priority is taught by Banerjee in a related endeavor.

Banerjee discloses as his invention a method and system for improving the performance of a TCP connection [Abstract]. Specifically, Banerjee discloses the additionally recited feature of the method wherein the low demand TOE clients are granted access to the port based on a priority (e.g. PCBs may be 'prioritized' {High / Low Priority 'connection' with clients}) [Abstract] [Figs. 4 & 5].

It would thus be obvious to one of ordinary skill in the art at the time of the invention to modify and/or combine Illikkal's invention, with the above said feature, as disclosed by Banerjee, for the motivation of providing a system and method for improving computer network connection processing by prioritizing PCBs and storing frequently used or other high priority PCBs in a PCB cache whereby the high priority PCBs may be located quickly [0015].

Claims 16 and 23 recite the same limitations as claim 6, are distinguished only by statutory category, and thus rejected on the same basis.

As per Claims 8 and 18, Illikkal in view of Banerjee discloses a method as recited in claim 1, further comprising the steps of:

providing a hash reference table (Banerjee: e.g., 'store PCB in Hash Table' 406) [Fig. 4];

wherein the hash reference table is comprised of hash values corresponding to each CB entry in the CB cache (Banerjee: e.g., PCB Hash Table with 'pointer' 604 associated with a particular PCB in a linked list of the table) [0008] [0013] [Fig. 6];

creating a hash value for a received network packet (Banerjee: e.g., 'receive a packet' 502) [Fig. 5] (e.g., PCB 600) [0007-0008];

comparing the received network packet hash value with hash values in the hash reference table [Banerjee: 0020-0021]; and

searching for a corresponding CB entry in the CB cache via a port if the network packet hash value matches a hash value in the hash reference table [Banerjee: 0020-0021].

With regards to the claim, while Illikkal discloses substantial features of the invention, the additionally recited features of the method further comprising the steps of providing a hash reference table; wherein the hash reference table is comprised of hash values corresponding to each CB entry in the CB cache; creating a hash value for a received network packet; comparing the received network packet hash value with hash values in the hash reference table; and searching for a corresponding CB entry in the

CB cache via a port if the network packet hash value matches a hash value in the hash reference table is taught by Banerjee in a related endeavor.

Banerjee discloses as his invention a method and system for improving the performance of a TCP connection [Abstract]. Specifically, Banerjee discloses the additionally recited features of the method further comprising the steps of providing a hash reference table (Banerjee: e.g., 'store PCB in Hash Table' 406) [Fig. 4]; wherein the hash reference table is comprised of hash values corresponding to each CB entry in the CB cache (Banerjee: e.g., PCB Hash Table with 'pointer' 604 associated with a particular PCB in a linked list of the table) [0008] [0013] [Fig. 6]; creating a hash value for a received network packet (Banerjee: e.g., 'receive a packet' 502) [Fig. 5] (e.g., PCB 600) [0007-0008]; comparing the received network packet hash value with hash values in the hash reference table [Banerjee: 0020-0021]; and searching for a corresponding CB entry in the CB cache via a port if the network packet hash value matches a hash value in the hash reference table [Banerjee: 0020-0021].

It would thus be obvious to one of ordinary skill in the art at the time of the invention to modify and/or combine Illikkal's invention, with the above said feature, as disclosed by Banerjee, for the motivation of providing a system and method for improving computer network connection processing by prioritizing PCBs and storing frequently used or other high priority PCBs in a PCB cache whereby the high priority PCBs may be located quickly [0015].

Claim 18 recites the same limitations as claim 8, is distinguished only by statutory category, and thus rejected on the same basis.

As per Claims 9, 10, 19 and 20, Illikkal in view of Banerjee discloses a method as recited in Claim 1, further comprising the steps of:

providing a CB identifier reference table (Banerjee: e.g., PCB Hash Table) [0013];

wherein the CB identifier reference table is comprised of a unique CB identifier corresponding to each CB entry in the CB cache and an associated CB cache index (Banerjee: e.g., PCB Hash Table with 'pointer' 604 associated with a particular PCB in a linked list of the table) [0008] [0013] [Fig. 6];

creating a CB identifier by parsing out a CB identifier from a CB access address [Banerjee: 0007-0008] [Fig. 6];

comparing the CB identifier with CB identifier values in the CB identifier reference table [Banerjee: 0020-0021];

accessing the CB cache via a port using the CB cache index of a matching CB identifier value in the CB identifier reference table (Banerjee: e.g., port 80) [0020-0021];
and

wherein if the CB identifier does not match a CB identifier value in the CB identifier reference table, then the corresponding socket has either not been assigned to the TOE or the CB entry must be brought into the cache from an optional memory [Banerjee: 0020-0021].

With regards to the claims, while Illikkal discloses substantial features of the invention, the additionally recited features of the method further comprising the steps of providing a CB identifier reference table; wherein the CB identifier reference table is comprised of a unique CB identifier corresponding to each CB entry in the CB cache and an associated CB cache index; creating a CB identifier by parsing out a CB identifier from a CB access address; comparing the CB identifier with CB identifier values in the CB identifier reference table; accessing the CB cache via a port using the CB cache index of a matching CB identifier value in the CB identifier reference table; and wherein if the CB identifier does not match a CB identifier value in the CB identifier reference table, then the corresponding socket has either not been assigned to the TOE or the CB entry must be brought into the cache from an optional memory is taught by Banerjee in a related endeavor.

Banerjee discloses as his invention a method and system for improving the performance of a TCP connection [Abstract]. Specifically, Banerjee discloses the additionally recited features of the method further comprising the steps of providing a CB identifier reference table (Banerjee: e.g., PCB Hash Table) [0013]; wherein the CB identifier reference table is comprised of a unique CB identifier corresponding to each CB entry in the CB cache and an associated CB cache index (Banerjee: e.g., PCB Hash Table with 'pointer' 604 associated with a particular PCB in a linked list of the table) [0008] [0013] [Fig. 6]; creating a CB identifier by parsing out a CB identifier from a CB access address [Banerjee: 0007-0008] [Fig. 6]; comparing the CB identifier with CB identifier values in the CB identifier reference table [Banerjee: 0020-0021]; accessing

the CB cache via a port using the CB cache index of a matching CB identifier value in the CB identifier reference table (Banerjee: e.g., port 80) [0020-0021]; and wherein if the CB identifier does not match a CB identifier value in the CB identifier reference table, then the corresponding socket has either not been assigned to the TOE or the CB entry must be brought into the cache from an optional memory [Banerjee: 0020-0021].

It would thus be obvious to one of ordinary skill in the art at the time of the invention to modify and/or combine Illikkal's invention, with the above said feature, as disclosed by Banerjee, for the motivation of providing a system and method for improving computer network connection processing by prioritizing PCBs and storing frequently used or other high priority PCBs in a PCB cache whereby the high priority PCBs may be located quickly [0015].

Claim 19 recites the same limitations as claim 9, is distinguished only by statutory category, and thus rejected on the same basis.

Claims 10 and 20 recite the same limitations as claims 9 and 19, except for the additional recited feature of providing means for retrieving a corresponding CB entry from the optional memory and placing the retrieved CB entry in the CB cache, if the CB cache index of the matching CB identifier value indicates that the CB entry is not in the CB cache, which is also expressly disclosed by Banerjee [Figs 4-7].

As per claim 22, Illikkal in view of Banerjee discloses an apparatus as recited in claim 21, further comprising: a mechanism for arbitrating access between TOE clients sharing a common port in the multi-port device based on a priority; and wherein time critical TOE clients are assigned a higher priority.

With regards to the claim, while Illikkal discloses substantial features of the invention, the additionally recited feature of the apparatus further comprising a mechanism for arbitrating access between TOE clients sharing a common port in the multi-port device based on a priority, wherein time critical TOE clients are assigned a higher priority is taught by Banerjee in a related endeavor.

Banerjee discloses as his invention a method and system for improving the performance of a TCP connection [Abstract]. Specifically, Banerjee discloses the additionally recited feature of the apparatus further comprising a mechanism for arbitrating access between TOE clients sharing a common port (Banerjee: e.g., port 80) [0020] in the multi-port device based on a priority, wherein time critical TOE clients are assigned a higher priority (Banerjee: e.g., certain 'requests', such as WEB requests, may be assigned a higher priority than other connections) [Abstract] [0019-0021].

It would thus be obvious to one of ordinary skill in the art at the time of the invention to modify and/or combine Illikkal's invention, with the above said feature, as disclosed by Banerjee, for the motivation of providing a system and method for improving computer network connection processing by prioritizing PCBs and storing

frequently used or other high priority PCBs in a PCB cache whereby the high priority PCBs may be located quickly [0015].

3. Claims 5, 7, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Illikkal in view of Boucher et al (hereinafter Boucher), U.S. Patent Publication US 2002/0156927 A1.

As per Claims 5 and 15, Illikkal in view of Boucher discloses a method as recited in claim 1, wherein CB entries are read from the CB cache in a word order that is dependent upon a port's purpose.

With regards to the claim, while Illikkal discloses substantial features of the invention, the additionally recited feature of the method wherein CB entries are read from the CB cache in a word order that is dependent upon a port's purpose is taught by Boucher in a related endeavor.

Boucher discloses as his invention a method and system for improving the performance of a TCP connection [Abstract]. Specifically, Boucher discloses the additionally recited feature of the method wherein CB entries are read from the CB cache in a word order that is dependent upon a port's purpose (e.g., creating a 'word' or 'words' which identify a message packet....) [0043-0044] [0046] [Fig. 4c].

It would thus be obvious to one of ordinary skill in the art at the time of the invention to modify and/or combine Illikkal's invention, with the above said feature, as disclosed by Boucher, for the motivation of providing a system and method for processing network communication that greatly increases the speed of that processing and the efficiency of moving the data being communicated [0012].

Claim 15 recites the same limitations as claim 5, is distinguished only by statutory category, and thus rejected on the same basis.

As per Claims 7 and 17, Illikkal in view of Boucher discloses a method as recited in Claim 1, further comprising the step of: providing field locking means for locking a specific field within a CB entry that is being accessed by a port; wherein the locking means prevents other ports from accessing a locked field.

With regards to the claim, while Illikkal discloses substantial features of the invention, the additionally recited feature of the method further comprising the step of providing field locking means for locking a specific field within a CB entry that is being accessed by a port, wherein the locking means prevents other ports from accessing a locked field is taught by Boucher in a related endeavor.

Boucher discloses as his invention a method and system for improving the performance of a TCP connection [Abstract]. Specifically, Boucher discloses the

additionally recited feature of the method further comprising the step of providing field locking means for locking a specific field within a CB entry that is being accessed by a port, wherein the locking means prevents other ports from accessing a locked field (e.g., 'setting locks') [0092] (e.g., "LOCK STATUS") [0609].

It would thus be obvious to one of ordinary skill in the art at the time of the invention to modify and/or combine Illikkal's invention, with the above said feature, as disclosed by Boucher, for the motivation of providing a system and method for processing network communication that greatly increases the speed of that processing and the efficiency of moving the data being communicated [0012].

Claim 17 recites the same limitations as claim 7, is distinguished only by statutory category, and thus rejected on the same basis.

Conclusion

1. The Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the

references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenford Madamba whose telephone number is 571-272-7989. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Valencia Wallace Martin can be reached on 571-272-3440. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/John Follansbee/
Supervisory Patent Examiner, Art Unit 2151

Glenford Madamba
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